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EXAMINER				
ARMAND, MARC ANTHONY				
ART UNIT		PAPER NUMBER		
2814				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/582,398

**Applicant(s)**

NAKAYAMA ET AL.

**Examiner**

MARC ARMAND

**Art Unit**

2814

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 April 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11 and 12 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**2. Claims 1-5, 8 are rejected under 35 U.S.C. 102(e) as being unpatentable over Forrest et al; (Forrest) US 2004/0031966.**

Regarding to claim 1, Forrest shows in fig.1,2, an organic light-light conversion device comprising: a light sensing unit (250)(Para 0045) having a layer (252) including a photo-conductive organic semiconductor that causes a photo-current multiplication phenomenon by light irradiation (Para 0045), and a light emitting unit (260)(Para 0045) having a layer (230) including an electroluminescent organic semiconductor that emits light by current injection, characterized in that at least one of the photo-conductive organic semiconductor and the electroluminescent organic semiconductor (250 or 260) is a polymer (Para 0033) semiconductor having a conjugation (photodetector made of Cu-phthalocyanine (CuPc) and 3,4,9,10-perylene-tetracarboxylic bis-benzimidazole (PTCBI) that are made with conjugating bonding and are polymers (Para 0036) in the main chain.

Regarding to claim 2, Forrest shows in fig.1, 2, an organic light-light conversion wherein the photo-conductive organic semiconductor (252) is a polymer semiconductor (Para 0036).

Regarding to claim 3, Forrest shows in fig.1, 2, an organic light-light conversion wherein the electroluminescent organic semiconductor (230) (Para 0045) is a polymer semiconductor (Para 0033).

Regarding to claim 4, Forrest shows in fig.1, 2, an organic light-light conversion, wherein the photo-conductive organic semiconductor (252) and the electroluminescent organic semiconductor (230) are polymer semiconductors (Para 0033, Para 0036).

Regarding to claim 5, Forrest shows in fig.1, 2, an organic light-light conversion comprising:

- a) a light sensing unit (250) having a layer including the photo-conductive organic semiconductor (252),
- b) a light emitting unit (260) having a layer including the electroluminescent organic semiconductor (230) placed on a different location from the light sensing unit on the same substrate (210)(Para 0045), and
- c) a conductive layer (first electrode (220 or 251) can be a single layer (Para 0045) connecting the light sensing unit to the light emitting unit laid on the same substrate (210).

Regarding to claim 8, Forrest shows in fig.1, 2, an organic light-light conversion, wherein the light sensing unit (250) having a layer including the photo - conductive

organic semiconductor (252) is integrally laminated with the light emitting unit (260) having a layer including the electroluminescent organic semiconductor (260).

Regarding claim 11, Forrest shows in fig. 11 a device characterized by comprising a plurality of an organic light-light conversion devices (Para 0021) comprising: a light sensing unit (250) having a layer including a photo-conductive organic semiconductor (252) that causes a photo-current multiplication phenomenon by light irradiation, and a light emitting unit (260) having a layer including an electroluminescent organic semiconductor (230) that emits light by current injection, characterized in that at least one of the photo-conductive organic semiconductor (252) and the electroluminescent organic semiconductor (230) is a polymer (Para 0033) semiconductor having a conjugation (photodetector made of Cu-phthalocyanine (CuPc) and 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI) that are made with conjugating bonding and are polymers (Para 0036) in the main chain.

In the recitation "image intensifier" that has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. MPEP 2111.02.

***Claim Rejections - 35 USC § 103***

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**5. Claims 6, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forrest et al; (Forrest) US 2004/0031966 as applied to claims 1-5, 8 and further in view of Okabe; (Okabe) USPAT 5,555,205.**

Regarding claims 6 and 7, Forrest shows in fig.1, 2, a device having a light sensing unit (250) and a light emitting unit (260).

Forrest differs from the claimed invention because he does not explicitly disclose a device wherein a light shielding member is provided between the light sensing unit and light emitting unit; a device where the translucent member having a transmittance

that suppresses but does not completely shield the flow of feedback light into the light sensing unit is provided between the light sensing unit and the light emitting unit.

Igaki shows in fig.12 a semiconductor device comprising: a conductive layer (14) connecting the light sensing unit to the light emitting unit laid on the same substrate; a light shielding member (16) (fig.4) (col.4, line 55-60) is provided between the light sensing unit (31) and light emitting unit (21); a device where the translucent member having a transmittance that suppresses but does not completely shield the flow of feedback light into the light sensing unit is provided between the light sensing unit and the light emitting unit.

Igaki is evidence that ordinary workers skilled in the art would find reasons, suggestions or motivations to modify the device of Forrest. Therefore, at the time the invention was made; it would have been obvious to use the device of Igaki in the device of Forrest to have a device a device wherein a light shielding member is provided between the light sensing unit and light emitting unit; a device where the a translucent member having a transmittance that suppresses but does not completely shield the flow of feedback light into the light sensing unit is provided between the light sensing unit and the light emitting unit in the device of Forrest because it will provide a device with a good light shielding property and reduce the cost of the device (col.2,line 40-50).

**6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forrest et al; (Forrest) US 2004/0031966 as applied to claims 1-5, 8 and further in view of Booth et al; (Booth) US 2003/0122749.**

Regarding to claim 12, Forrest shows in fig.1,2, an organic light-light conversion device comprising: a light sensing unit (250) having a layer including a photo-conductive organic semiconductor (252) that causes a photo-current multiplication phenomenon by light irradiation, and a light emitting unit (260) having a layer including an electroluminescent organic semiconductor (230) that emits light by current injection (Para 0043), characterized in that at least one of the photo-conductive organic semiconductor (252) and the electroluminescent organic semiconductor (230) is a polymer semiconductor (Para 0033-0036) having a conjugation (photodetector made of Cu-phthalocyanine (CuPc) and 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI) that are made with conjugating bonding and are polymers (Para 0036) in the main chain.

Forrest differs from the claimed invention because he does not explicitly disclose a semiconductor device having a unit which measures and outputs a voltage applied to both ends of the layer including the electroluminescent organic semiconductor.

Booth shows in fig.1-4, a device having a unit (50) (60) which measures and outputs a voltage applied to both ends (fig.1) of the layer including the electroluminescent organic semiconductor (10) (Para 0038).

Booth is evidence that ordinary workers skilled in the art would find reasons, suggestions or motivations to modify the device of Forrest. Therefore, at the time the invention was made; it would have been obvious to use the teaching of Booth in the device of Forrest to have a semiconductor device having a unit which measures and outputs a voltage applied to both ends of the layer including the electroluminescent



organic semiconductor in the device of Forrest because will measure the amount of energy hitting the OLED (Para 0028) and it's intensity.

**7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forrest et al; (Forrest) US 2004/0031966 as applied to claims 1-5, 8 and further in view of Cok et al; (Cok) US 2003/0048239.**

Regarding to claim 12, Forrest shows in fig.1,2, an organic light-light conversion device comprising: a light sensing unit (250) having a layer including a photo-conductive organic semiconductor (252) that causes a photo-current multiplication phenomenon by light irradiation, and a light emitting unit (260) having a layer including an electroluminescent organic semiconductor (230) that emits light by current injection (Para 0043), characterized in that at least one of the photo-conductive organic semiconductor (252) and the electroluminescent organic semiconductor (230) is a polymer semiconductor (Para 0033-0036) having a conjugation (photodetector made of Cu-phthalocyanine (CuPc) and 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI) that are made with conjugating bonding and are polymers (Para 0036) in the main chain.

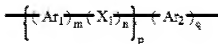
Forrest differs from the claimed invention because he does not explicitly disclose a semiconductor device having a unit which measures and outputs a voltage applied to both ends of the layer including the electroluminescent organic semiconductor.

Cok shows in fig.1, 7 a device having a unit (14) (Para 0018) which measures and outputs a voltage applied to both ends (fig.1, 7) of the layer including the electroluminescent organic semiconductor (12) (Para 0018).

Cok is evidence that ordinary workers skilled in the art would find reasons, suggestions or motivations to modify the device of Forrest. Therefore, at the time the invention was made; it would have been obvious to use the teaching of Cok in the device of Forrest to have a semiconductor device having a unit which measures and outputs a voltage applied to both ends of the layer including the electroluminescent organic semiconductor in the device of Forrest because it will improve the image capture device and a device simple to manufacture; supports a variety of color exposure mechanisms (Para 0006).

***Allowable Subject Matter***

7. Claims 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record neither anticipated nor rendered obvious all the limitation of claim 9 including a polymer semiconductor that contains one or more repeating units be the formula:



Wherein Ar.sub.1 and Ar.sub.2 each independently represent an arylene group or a divalent heterocyclic group. X.sub.1 represents --CR.sub.1.dbd.CR.sub.2--, --C.ident.C-- or --N(R.sub.3)--; R.sub.1 and R.sub.2 each independently represent a hydrogen atom, an alkyl group, an aryl group, a monovalent heterocyclic group, a carboxyl group, a substituted carboxyl group or a cyano group; R.sub.3 represents a hydrogen atom, an

alkyl group, an aryl group, a monovalent heterocyclic group, an arylalkyl group or a substituted amino group. More over, the prior art of record neither anticipated nor rendered obvious all the limitation of claim 5 including a translucent member provided between the light sensing unit and light emitting unit.

***Response to Arguments***

8. Applicant's arguments with respect to claims 1-8, 11, and 12 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARC ARMAND whose telephone number is (571)272-9751. The examiner can normally be reached on 9-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MARC ARMAND/  
Examiner, Art Unit 2814

/Wael M Fahmy/  
Supervisory Patent Examiner, Art  
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